AGENDA ITEM V B

REQUEST FOR FULL APPROVAL OF RESEARCH UNIT

GRAMBLING STATE UNIVERSITY

CENTER FOR MATHEMATICAL ACHIEVEMENT IN SCIENCE AND TECHNOLOGY

AGENDA ITEM V B

REQUEST FOR FULL APPROVAL OF RESEARCH UNIT

GRAMBLING STATE UNIVERSITY

CENTER FOR MATHEMATICAL ACHIEVEMENT IN SCIENCE AND TECHNOLOGY

BACKGROUND INFORMATION

At its meeting December 8, 2005, the Board of Regents acted as follows:

> **One-year, conditional approval is granted for the Center for Mathematical Achievement in Science and Technology at Grambling State University. As required by Board of Regents Academic Affairs Guidelines: Proposed New Centers, Institutes, and Other Academic/Research Units, Grambling State University shall submit to the Commissioner of Higher Education a proposal for full approval of the Center by December 1, 2006. If this proposal is not forthcoming by this date, the Board of Regents shall reexamine the need for this center.**

The institution now requests full approval for the non-state supported Center for a period of four years.

STAFF SUMMARY

1. Description/Objectives/Goals

The proposal states the following:

> *The Center for Mathematical Achievement in Science and Technology (CMAST) [will have as its] primary mission increasing the number of underrepresented minority graduates in a science, technology, engineering, or mathematics (STEM) discipline.*

More specifically, the Center shall:

a. Institute reform of all introductory mathematics courses;
b. Provide Summer enrichment programs for pre-freshman, freshman, and sophomores interested in STEM discipline areas;
c. Provide Summer enrichment programs for mathematics and science teachers;
d. Conduct research designed to systematically examine and improve mathematics instruction;

e. Support varied other efforts to enhance the role and function of science and mathematics through university curricula which in turn should significantly raise the profile of study and career opportunities in STEM fields.

Center goals were given as follows:

a. Decreasing the percentage of students that receive failing grades in introductory math courses from 60 to 35% over a five-year period;
b. Increase the average grade point average of STEM majors from 2.23 tp 2.50;
c. Increase STEM graduates enrolling in STEM graduate programs from 5 to 15 %;
d. Increase STEM majors engaging in undergraduate research projects from 6 to 30%; and
e. Increase performance of Grambling High Schools students on the Graduate Exit Exam.

The Board of Regents *Master Plan for Public Post-secondary Education: 2001* indicates that Grambling serves the educational and cultural needs of North Louisiana with a rich tradition of educating African Americans through a broad array of academic and professional programs. The institution is dedicated to raising the standard of living and enhancing the quality of life for citizens through life-long learning and community, economic and entrepreneurial activities. As Grambling transitions from a historically Open Admissions to a Selective III Admissions institution by Fall 2010, the Center will prepare potential students for more stringent requirements and facilitate their success in post-secondary education.

2. Need

The performance of students in mathematics courses and their retention as STEM majors supports the need for the CMAST program. The failure/drop rate for general education mathematics, Math 131–College Algebra, is sixty-seven per cent. Five year averages (AY 1999-2004) for grades of W(withdrawal), F and D in mathematics courses required for STEM majors are indicated in the chart which follows.

Course No.	**Math 147**	**Math 148**	**Math 153**	**Math 154**	**Math 201**
Course Title	Pre-Calculus I	Pre-Calculus II	Calculus I	Calculus II	Calculus III
5 Yr ⍉ W, D, F	60%	48%	58%	65%	68%

These data support the need for a systematic approach to increase both student performance in introductory mathematics courses and numbers of graduates in STEM areas that are mathematically based. CMAST activities are designed to foster success, completion, and retention of undergraduate STEM majors as well as to enable them to continue into STEM graduate programs.

3. Faculty

Seventeen Grambling faculty, whose *vitae* were provided, will participate in CMAST. The exact role in the Center for each individual was outlined in the proposal. Their backgrounds include education, physics, chemistry, environmental science, mathematics and management.

4. Facilities & Equipment

CMAST will utilize space and equipment available to the Departments of Chemistry, Mathematics/Computer Science, Physics, Biology and Engineering Technology. Existing facilities are deemed adequate for the current objectives of the Center.

5. Administrative Structure

The Center will be headed by a Project Director who will guide five faculty, each assigned to oversee one of five Center components (Restructuring Mathematics, Faculty Development, Scholars Program, Outreach Program, and Assessment). The Project Director shall report to the Dean of College of Arts and Sciences who will also serve as Project Manager. The Dean shall be answerable to the Vice President for Academic Affairs for Center operations and results.

6. Budget

The Center was awarded a five-year, $2.4 million grant from the National Science Foundation (NSF) in 2005. Assuming sufficient progress toward meeting ongoing NSF requirements occurs, funding for the next four years will be secure. Anticipated expenses, totaling $ 2,308,714 for the five years, are indicated in the table which follows.

Expenses	AY ! (2005-06)	AY 2 (2006-07)	AY 3 (2007-08)	AY 4 (2008-09)	AY 5 (2009-10)
Admin Salary Release	$ 55,000	$ 55,000	$ 55,000	$ 55,000	$ 55,000
Faculty Salary Release	87,620	93,380	93,380	93,380	93,380
Travel	15,000	5,000	5,000	5,000	5,000
Technical Support	15,000	15,000	15,000	15,000	15,000
Supplies	103,973	154,868	154,868	154,868	154,868
Prof Services	16,000	11,000	11,000	11,000	11,000
Student Stipend	28,500	58,500	58,500	58,500	58,500
Scholarships	18,000	16,000	16,000	16,000	16,000
Indirect Costs	66,429	67,050	67,050	67,050	67,050
Total	**$ 405, 522**	**$ 475,798**	**$ 475,798**	**$ 475,798**	**$ 475,798**

No state match other than personnel time appears to be required. Grambling did not indicate

how faculty will absorb these additional duties within their existing responsibilities. Given the five-year NSF award, a contingency funding plan is not necessary, unless the grant is unexpectedly cancelled.

STAFF ANALYSIS

Selection of CMAST for the level and duration of support from NSF is an extraordinary achievement for the University. The systematic approach to improving student mathematics performance and retention and to increasing the participation of traditionally underrepresented minorities in mathematics, science and technology is to be commended.

STAFF RECOMMENDATION

The staff recommends that the Academic and Student Affairs Committee grant approval for the Center for Mathematical Achievement in Science and Technology at Grambling State University for a period of four years.